

## **REMARKS**

### **Terminal Disclaimer and The Obviousness-Type Double Patenting Rejection**

A replacement terminal disclaimer is filed herewith. Please ignore the previously filed terminal disclaimer as it is expressly withdrawn. Said terminal disclaimer inadvertently and erroneously recited the incorrect reference. Applicants apologize for any inconvenience this may have caused.

The application of the previously paid fees is respectfully requested.

### **Objections**

The term  $\text{CE}_2\text{O}_3$  is corrected as requested by the Examiner.

Applicants respectfully decline to amend the term "obtainable" as suggested. There is nothing objectionable about said term and no reasons for the objection are set forth in the Office Action.

The Office Action alleges that the term "obtainable" is indefinite because it is unclear as to whether the claim is limited to one made by the claimed method or merely preferably made by the claimed method.

If one of ordinary skill in the art follows the recited process steps, the claimed product would be achieved as required by a product-by-process claim.

And as clearly understandable from the term "obtainable," no other possible methods to achieve the same product are excluded; and nor do they have to be in order to render the claim non-objectionable. Merely because another possible process may be available or designable to achieve the claimed product does not mean that the claim should be objected to, and no case has held that the term "obtainable" has any objectionable issues in view of reasonable search.

The MPEP is in accord also. See, e.g., MPEP 2113, which is titled "PRODUCT-BY-PROCESS CLAIMS ARE NOT LIMITED TO THE MANIPULATIONS OF THE RECITED STEPS, ONLY THE STRUCTURE IMPLIED BY THE STEPS."

Reconsideration is respectfully requested.

### **Rejections Under 35 U.S.C. 112 and Other Amendments**

Claims 14 and 16 are further clarified rendering these rejections moot. Likewise, withdrawn claim 21 is also further clarified.

A formality issue is corrected in claim 6.

### Rejection Under 35 U.S.C. 103

Seo discloses antimicrobial pigments produced by a process in which *intercalation* of the silver oxide takes place into a coating layer of an inorganic pigment, which is admitted in the Office Action on page 8. Seo teaches the production of an amorphous glassy layer containing antimicrobial metals inside the lattice structure of the layer (see column 3, lines 42-44). The disclosed antimicrobial metals are silver, copper and zinc. See, e.g., abstract.

Compare this to the claimed product which is also described in some detail in the specification on page 14, line 23 to page 15, line 5 as follows:

It is believed that pigments according to the present invention are formed via an ion exchange reaction between protons or ions and antimicrobial ions of the antimicrobial compounds, such as for example silver ions, resulting in silver ions bonded to moieties of the inorganic pigment, for example Si-O<sup>-</sup> or Ti-O<sup>-</sup> moieties. These oligodynamically active structures can approximately be described as silver silicates or silver titanates. The source of silver ions for the reaction is for example silver oxide, which is only slightly soluble in water. However, the few silver ions that are at any time present in solution are capable of replacing protons on the surface area of the inorganic pigments forming water as the only reaction product besides the antimicrobial pigments. During the course of investigation further analytical experiments revealed the absence of silver metal or silver oxide simply deposited on the surface encouraging silver silicate or silver titanate to be the most relevant structures.  
(Emphasis added.)

Compare this to the disclosure of Seo in column 7 disclosing sintering, and the examples of this reference patent employing temperatures described as "roasting" at 450 to 800°C. Such an intercalation treatment does *not* suggest any process at room temperature (20 to 45°C), such as that presently claimed, at which intercalation of metal ions into a lattice and medical oxide would be chemically impossible. Indeed, there is no suggestion at all that such a process could be employed to produce effective antimicrobial pigments in Seo or in any of the other cited references.

Also see the disclosure on page 17, lines 3-5, of the present application teaching that the colour of the employed inorganic pigment and the antimicrobial pigment does not show a visually noticeable difference.

From this also, one of ordinary skill in the art would conclude that no silver oxide is present on the claimed inorganic pigments as such would change the color of the pigments.

Compare this to prior art pigments discussed in the specification on page 2 as follows:

EP 0 665 004 discloses antimicrobial cosmetic pigments comprising inorganic cosmetic pigments, an amorphous glassy coating layer of metal oxide formed over the surface of said inorganic cosmetic pigment and antimicrobial metals or antimicrobial metal ions intercalated inside the lattice of said coating layer of metal oxides. By forming an additional layer onto the cosmetic pigment, the colour of the pigment changes. This is undesirable for the manufacturer of applications or formulations because he is restricted to the colours that can be achieved with pigments having the additional layer. (Emphasis added.)

The pigments disclosed by Abe are covered with hydrous metal oxide and are not antimicrobial. Nothing in Abe even remotely teaches or suggests the inclusion of an antimicrobial metal in the coating or that such could be achieved by the therein disclosed process.

Abe teaches metal powder pigments, among which is silver, and inorganic pigments, among which is zinc oxide and titanium dioxide, etc. These pigments are however the pigments that serve as the cores which are coated by the disclosed process therein, and the materials disclosed for these cores are nowhere taught or suggested for use in the coating. Thus, the allegation that the pigments of Abe can contain, e.g., zinc, misses the point that the zinc, silver, zinc oxide, etc., is the core pigment, which does not act as an antimicrobial agent because it is coated as disclosed by Abe.

Moreover, Abe explicitly teaches away from the combination of metal powder pigments, which include, e.g., zinc and silver as the core pigments, and a coating of metal hydrous oxide. See column 5, lines 37-40, where Abe teaches that

Prior to covering with fine silica, the inorganic pigments other than ultramarine and metal powder pigments may be covered with a hydrous metal oxide such as hydrous oxides of zirconium, aluminum, titanium, cerium, antimony and magnesium. (Emphasis added.)

The prior art does not teach or suggest that antimicrobial pigments could be obtained by the claimed method, which includes the agitation of the pigment with AgO at room temperature.

One of ordinary skill in the art would have also not have had a reasonable expectation of success because at such low temperatures the antimicrobial metal would have, e.g., not been expected to be intercalated into the coating, which is what happened for the prior art antimicrobial pigments (see, e.g., Seo). Additionally, even if some expectation would have

been present for a minor amount of antimicrobial metal ending up in the coating if, e.g., silver, would have been added to the hydrous metal oxide coating process of Abe (which is of course not established by the prior art and is also explicitly not admitted), one of ordinary skill in the art would not have expected that such pigments would have sufficient antimicrobial activity due to the not-admitted expectation of at most a minor amount of antimicrobial metal in the coating.

However, see the antimicrobial investigations data in the specification starting on page 100, demonstrating the unexpected significant and actually excellent antimicrobial features over a long period of time with the claimed pigments which do not contain intercalated silver ions as do the prior art antimicrobial pigments.

Nowhere does the art teach the pigments (or provides an expectation thereof) of the present claims, which are described above in more detail. One of ordinary skill in the art would not have expected the formation of oligodynamically active structures which can approximately be described as silver silicates or silver titanates from a process as claimed due to the formation thereof via an ion exchange reaction between protons or ions and antimicrobial ions of the antimicrobial compounds.

The other references cited do not address the above-discussed aspects of the invention, nor are there any allegations to that end; and thus, do not cure the deficiencies thereof.

Reconsideration is respectfully and courteously requested.

### **Restriction**

Applicants bring the attention of the Examiner to MPEP § 821.04, Rejoinder, which states that "if the elected invention is directed to the product and the claims directed to the product are subsequently found patentable, process claims [both process of making and using] which either depend from or include all the limitations of the allowable product will be rejoined." Accordingly, the rejoinder of the non-elected claims is respectfully requested in accord with the rejoinder provisions of the MPEP.

Applicants respectfully request that if any issues remain at this point, that the Examiner contact the undersigned for the expeditious resolution thereof.

The Commissioner is hereby authorized to charge any fees associated with this response or credit any overpayment to Deposit Account No. 13-3402.

Respectfully submitted,

/Csaba Henter/

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